

Table S1: Covariate balance before and after propensity score matching

	Prior to PS matching			PS matched sample		
	Exposed (n= 175,325)	Unexposed (n= 505,531)	d	Exposed (n= 111,718)	Unexposed (n= 111,718)	d
Continuous; mean (SD)						
Age ^a	60.37 (11.75)	59.13 (12.20)	0.104	60.37 (12.12)	62.19 (12.64)	-0.147
Index of multiple deprivation in tertiles	5.81 (2.84)	5.88 (2.81)	-0.022	5.84 (2.84)	5.89 (2.82)	-0.015
Duration of ischaemic heart disease/ heart failure*	0.69 (2.98)	0.17 (1.56)	0.178	0.56(2.81)	0.64 (2.80)	0.028
Duration of hypertension*	2.16 (5.06)	0.53 (2.71)	0.402	1.99 (5.27)	2.28 (4.98)	-0.056
Categorical; n (%)						
Smoking status						
Non-smoker	68,555 (39.10)	156,489 (30.96)	0.171	41,260 (36.93)	42,007 (37.60)	-0.014
Current smoker	28,321(16.15)	67,680 (13.39)	0.078	17,171(15.37)	17,672(15.82)	-0.012
Ex-smoker	23,183 (13.22)	37,501 (7.42)	0.192	12,952 (11.59)	12,222 (10.94)	0.021
Missing smoking data	55,266 (31.52)	243,861 (48.24)	-0.347	40,335 (36.10)	39,817 (35.64)	0.010
BMI						
Underweight	1,297 (0.74)	4,294 (0.85)	-0.012	942 (0.84)	1,090 (0.98)	-0.014
Normal weight	36,658 (20.91)	102,886 (20.35)	0.014	24,747 (22.15)	23,148 (20.72)	0.035
Pre-obese	44,127 (25.17)	83,228 (16.46)	0.216	23,902 (21.39)	27,033 (24.20)	-0.067
Obese	24,957 (14.23)	33,293 (6.59)	0.252	12,758 (11.42)	12,708 (11.38)	0.001
Missing BMI data	68,286 (38.95)	281,830 (55.75)	-0.341	49,369 (44.19)	47,739 (42.73)	0.029
Binary; n (%)						
Male	86,465 (49.32)	250,778 (49.61)	-0.006	53,132(47.56)	48,844(43.72)	0.077
Hypertension	86,803 (49.51)	37,920 (7.5)	1.051	34,731(31.09)	37,526(33.59)	-0.053
Angina	17,149 (9.78)	5,644 (1.12)	0.389	7,131 (6.38)	5,445 (4.87)	0.066
Myocardial Infarction	16,383 (9.34)	4,542 (0.9)	0.390	5,682 (5.09)	4,368 (3.91)	0.056
Congestive cardiac failure	2,938 (1.68)	3,316 (0.66)	0.095	1,738 (1.56)	2,139 (1.91)	-0.026
Atrial fibrillation	6,115 (3.49)	3,940 (0.78)	0.188	3,578 (3.20)	3,476(3.11)	-0.068
Stroke	6,478 (3.69)	7,317 (1.45)	0.142	3,667(3.28)	4,775(4.27)	-0.052
Chronic kidney disease	2,547 (1.45)	3,653 (0.72)	0.071	1,423(1.27)	1,682(1.51)	-0.021
Diabetes	9,244 (5.27)	13,411 (2.65)	0.135	5,298(4.74)	7,131(6.38)	-0.072
Anxiety	12,206 (6.96)	16,879 (3.34)	0.164	8,047(7.20)	9,457(8.47)	-0.047
Migraine	7,777 (4.44)	9,213 (1.82)	0.151	5,349 (4.79)	6,531(5.85)	-0.047
Calcium channel blockers	7,777 (4.44)	4,440 (0.88)	0.223	3,639(3.26)	3,925(3.51)	-0.014
ACE inhibitors/Angiotensin II receptor antagonists	7,656 (4.37)	4,835 (0.96)	0.213	3,686 (3.30)	4,225(3.78)	-0.026
Bendroflumethiazide/Aldosterone antagonists/loop diuretics	15,322 (8.74)	10,366 (2.05)	0.422	7,159 (6.41)	7,895(7.07)	-0.026
Alfa-adrenoreceptor blocking drugs	1,052 (0.60)	743 (0.15)	0.074	533 (0.48)	574 (0.51)	-0.004
Aspirin/Clopidogrel	11,010 (6.28)	5,007 (0.99)	0.286	4,815 (4.31)	4,296 (3.85)	0.023
Statins/Fibrates	6,305 (3.60)	2,875 (0.57)	0.213	2,495 (2.23)	2,241 (2.01)	0.015

^aStandardised difference; ^a d > 0.1; * Duration in years of cardiovascular comorbidities prior to cohort entry

Table S2: Read code list**Knee and hip osteoarthritis**

Medcode	Readcode	Readterm
665	N05z611	Knee osteoarthritis NOS
1296	N053611	Patellofemoral osteoarthritis
2487	N05zL00	Osteoarthritis NOS, of knee
15144	N05z600	Osteoarthritis NOS, of the lower leg
21159	N051600	Localised, primary osteoarthritis of the lower leg
24079	Nyu2511	[X] Unilateral primary gonarthrosis
24145	Nyu2811	[X] Unilateral secondary gonarthrosis
24146	N051B00	Primary gonarthrosis, bilateral
33479	N052600	Localised, secondary osteoarthritis of the lower leg
34804	N053600	Localised osteoarthritis, unspecified, of the lower leg
41090	N054600	Oligoarticular osteoarthritis, unspecified, of lower leg
43474	Nyu2500	[X]Other primary gonarthrosis
70425	N05zM00	Osteoarthritis NOS, of tibio-fibular joint
73930	Nyu2800	[X]Other secondary gonarthrosis
73952	Nyu2700	[X]Other secondary gonarthrosis, bilateral
2852	N06z611	Knee Arthritis NOS
1104	N053512	Hip osteoarthritis NOS
2209	N05z511	Hip osteoarthritis NOS
6812	N05zJ00	Osteoarthritis NOS, of hip
15839	N051500	Localised, primary osteoarthritis of the pelvic region/thigh
20626	N053500	Localised osteoarthritis, unspecified, pelvic region/thigh
44041	N052500	Localised, secondary osteoarthritis of pelvic region/thigh
68648	N054500	Oligoarticular osteoarthritis, unspecified, of pelvis/thigh
4967	N05z500	Osteoarthritis NOS, pelvic region/thigh
24326	Nyu2E11	[X] Unilateral secondary coxarthrosis
102990	Nyu2200	[X]Other dysplastic coxarthrosis
101890	Nyu2300	[X]Other post-traumatic coxarthrosis

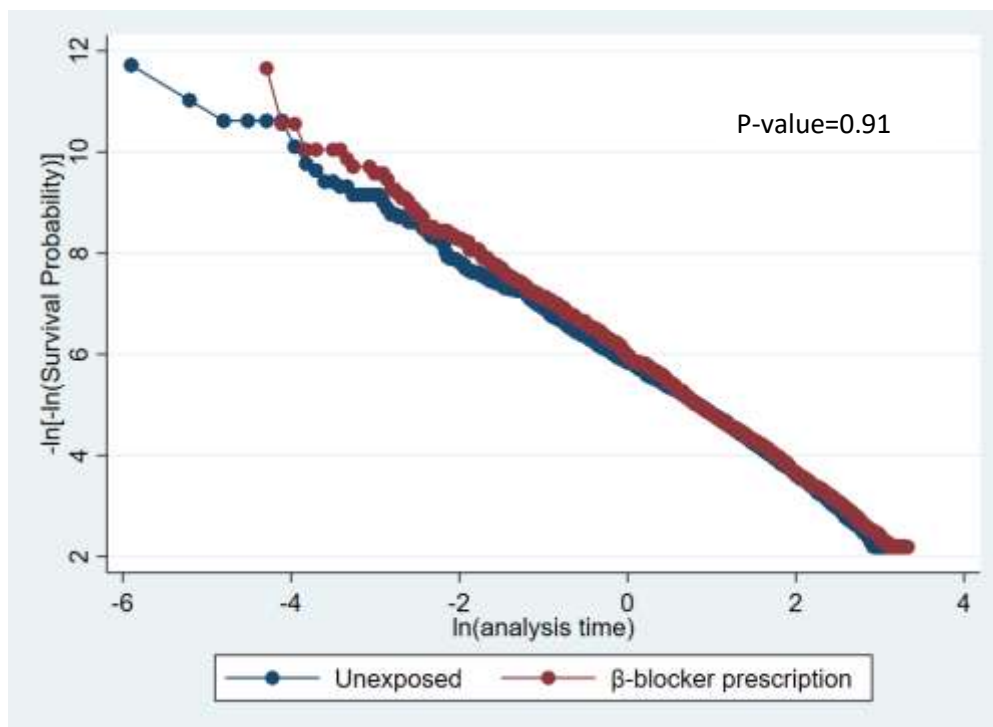
10854	Nyu2100	[X]Other primary coxarthrosis
99918	Nyu2E00	[X]Other secondary coxarthrosis
73948	Nyu2400	[X]Other secondary coxarthrosis, bilateral
24287	N051900	Primary coxarthrosis, bilateral
7334	N06z511	Hip Arthritis NOS

Knee pain and hip pain

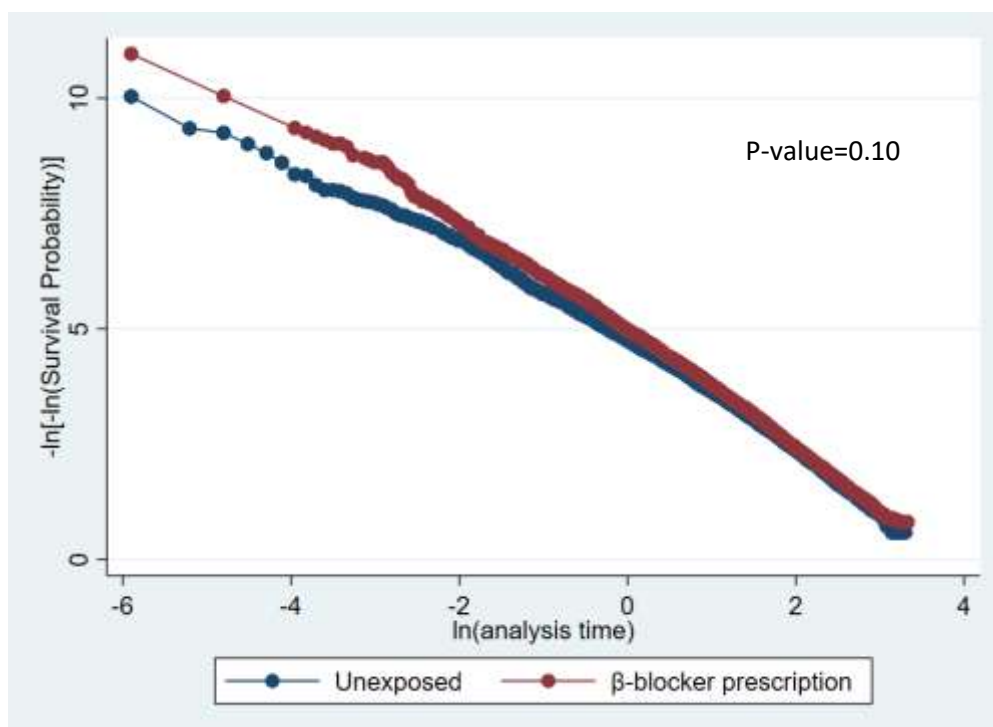
Medcode	Readcode	Readterm
554	1M10.00	Knee pain
6044	1M12.00	Anterior knee pain
6166	N094W00	Anterior knee pain
9517	N094611	Knee joint pain
10389	N094N00	Arthralgia of tibio-fibular joint
61245	N094M00	Arthralgia of knee
286	N094K00	Arthralgia of hip
1330	N094500	Arthralgia of the pelvic region and thigh
8736	N094K12	Hip pain
15146	N094512	Hip joint pain
33407	N094511	Coxalgia

Figure S1. Cox proportional hazard assumption: log-log plots and Global test results

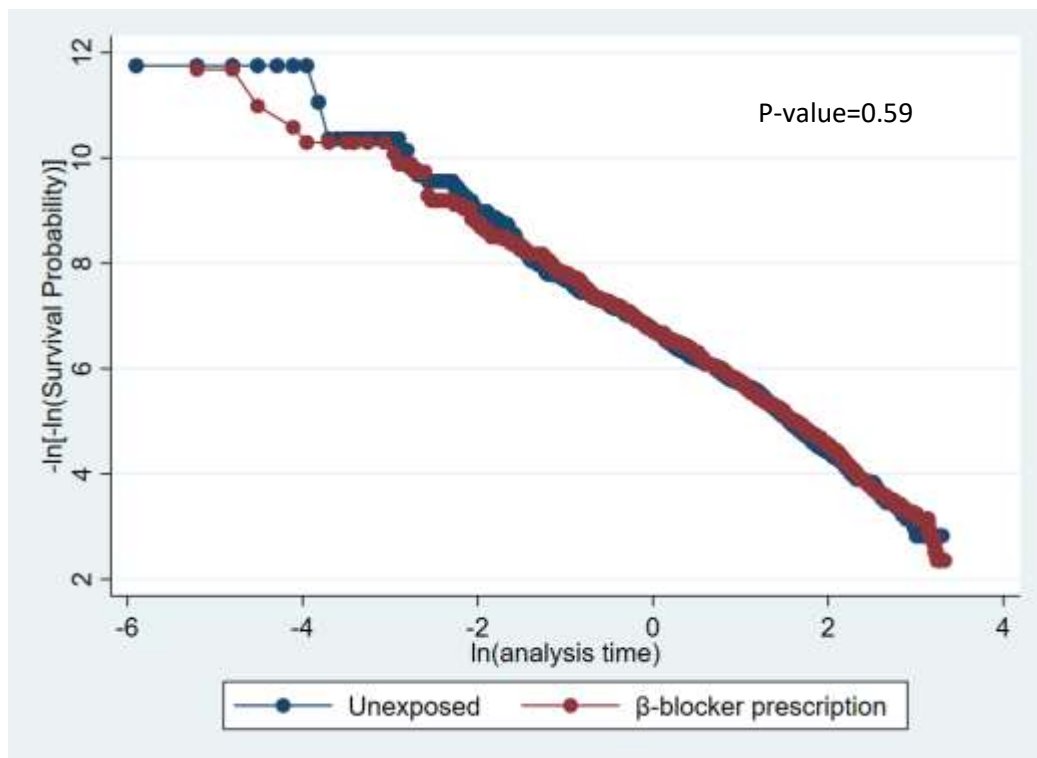
A. Knee OA



B. Knee pain



C. Hip OA



D. Hip pain

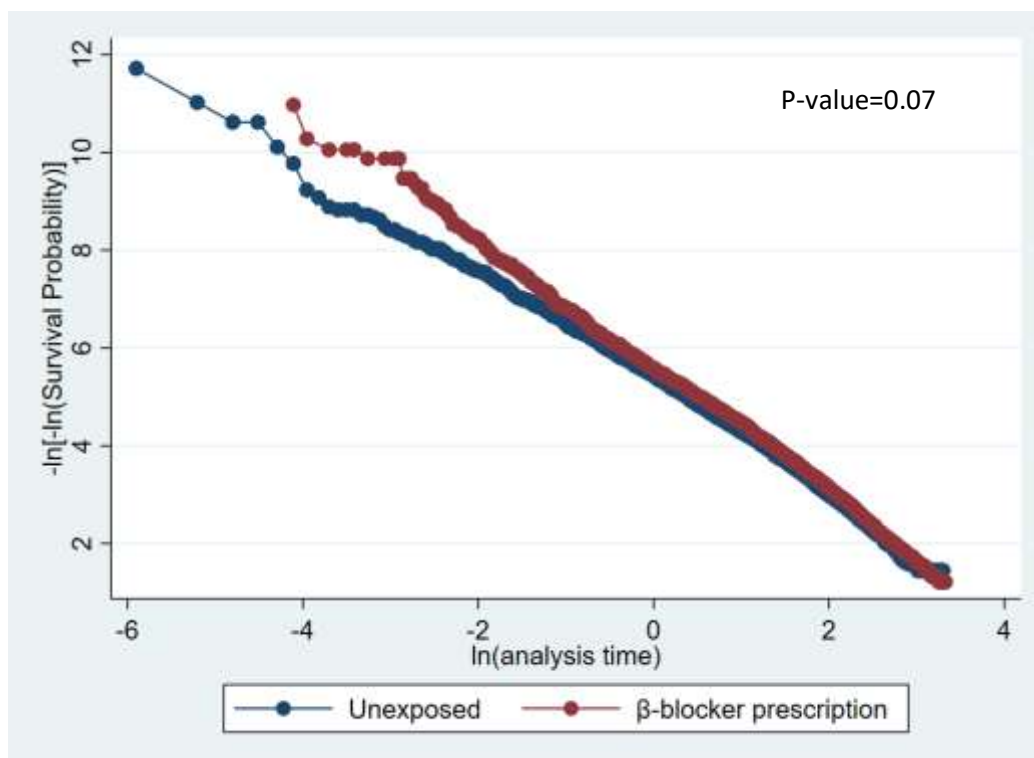


Figure S2: Participant flow diagram

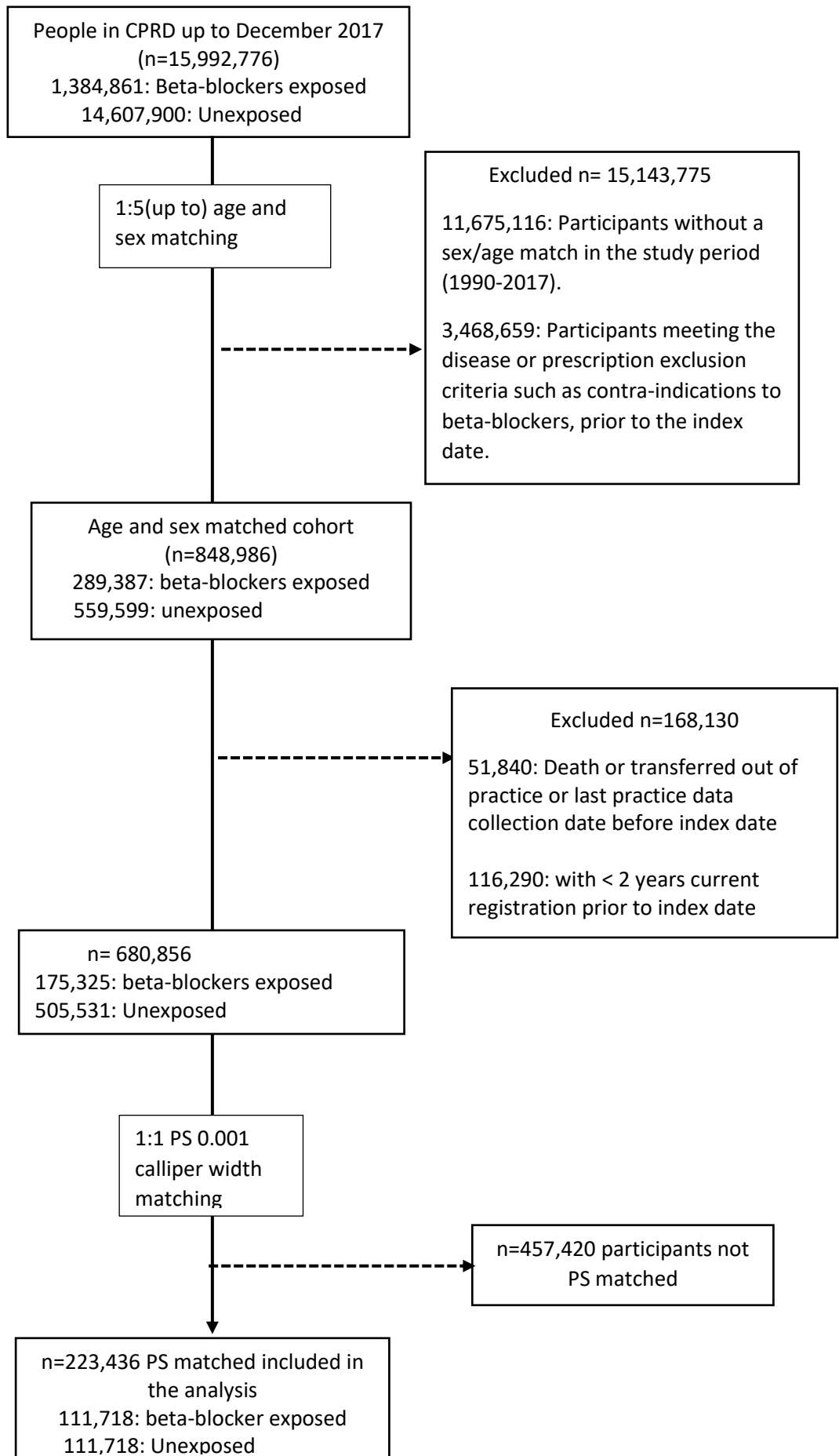


Figure S3: Cumulative hazard plots with 95% CIs of Hip OA [A] and Hip pain [B] consultation in β -blocker exposed and unexposed participants (n=223,436).

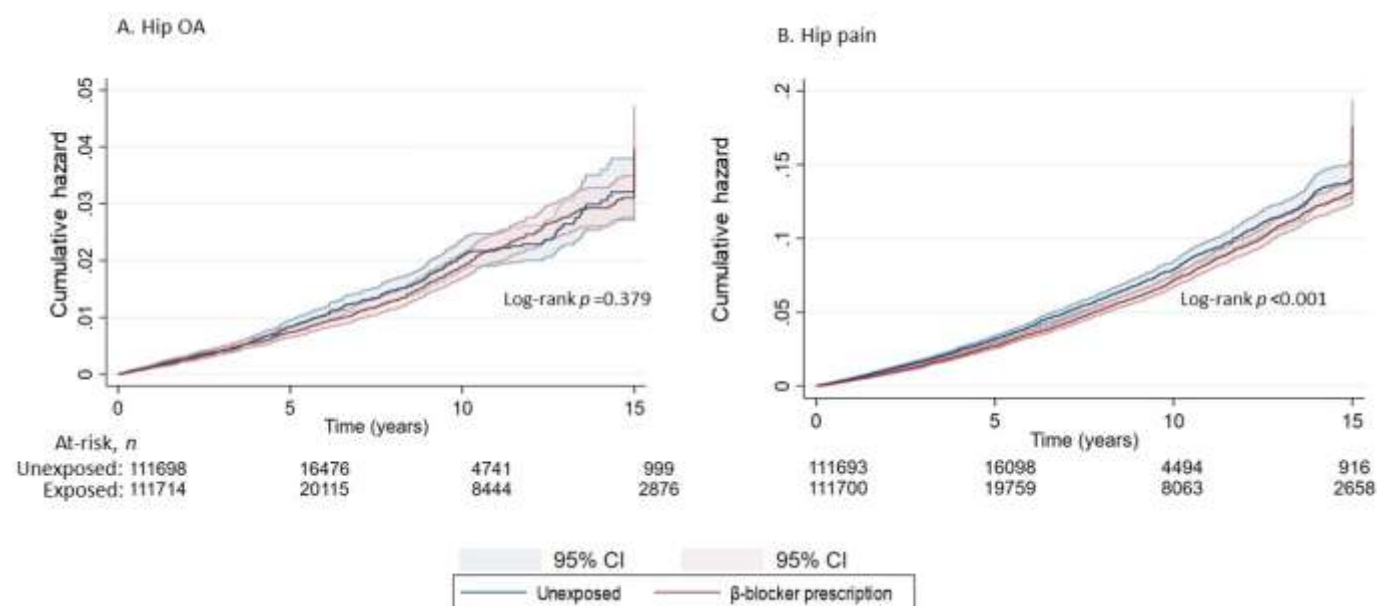


Figure S3 legend: Data was restricted to the last prescription of β -blocker and censored at 15 years of follow-up. The log-rank test was used to estimate the difference in cumulative hazards. OA=osteoarthritis.

Figure S4: Cumulative hazard and 95% CIs of hip OA [A] and hip pain [B] consultation in atenolol and propranolol exposed and unexposed participants (n=223,436).

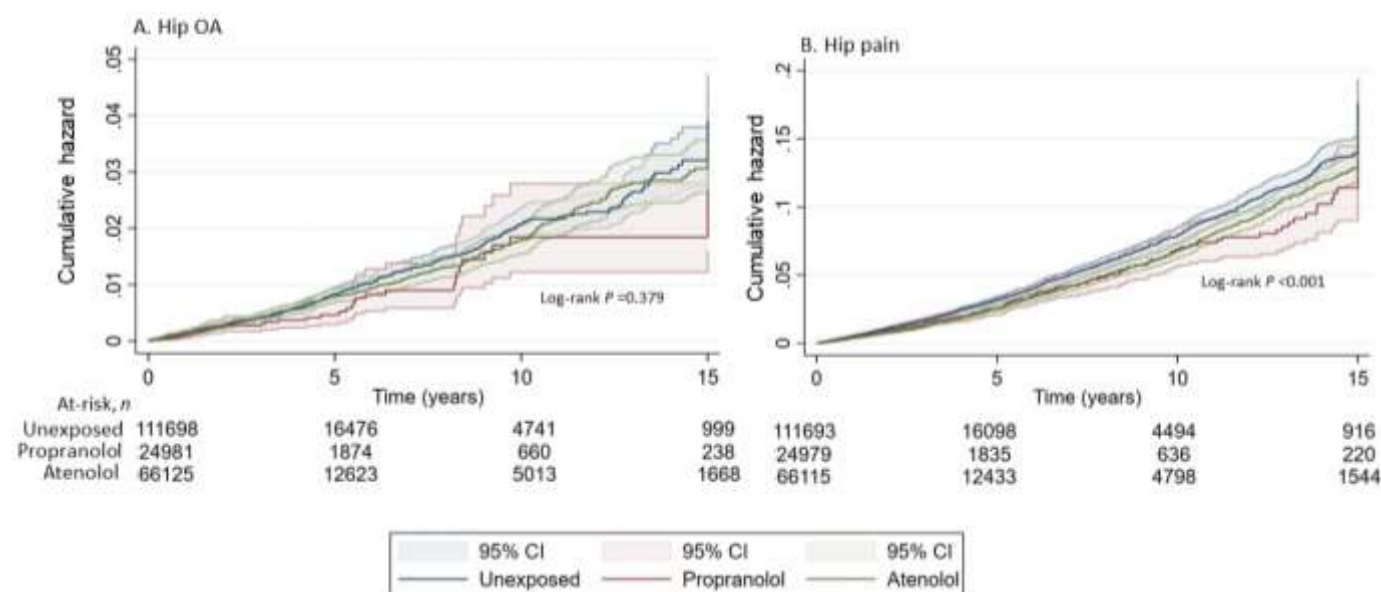


Figure S4 legend: Data was restricted to the last prescription of β -blocker and censored at 15 years of follow-up. The log-rank test was used to estimate the difference in cumulative hazards. OA=osteoarthritis.